Name _____

Homework 17
Section 5.4

1. (2ea) Determine the derivative of each function below.

   (a) $f(x) = e^{x^3-5x}$

   (b) $g(x) = 8^{2x+3}$

   (c) $h(x) = x^2e^{x^2}$

2. (4) Determine $f'(1)$ for $f(x) = e^{\sqrt{x^2+4x}}$. Round to three decimal places.

3. (5) Find the equation of the line which is tangent to the graph of $f(x) = e^x\left(5x^4 + 62x^2 + 4x + 11\right)$ when $x = 0$. Write your answer in point-slope form.

4. (5) A company which produces high quality dog beds finds that their profit (in thousands of dollars) can be modeled by the function $P(x) = \dfrac{3x^2 + 4}{e^{0.5x} + 7}$, where x is measured in hundreds of dog beds. What is the company's marginal profit when 600 dog beds are produced? Give your answer in dollars per dog bed and round to 2 decimal places (i.e. to the nearest cent).